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FACSIMILE DEVICE

[Fakushimiri Sochi]

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(54) Title of the invention

Facsimile device

(57) Summary

Objective: To provide a facsimile device capable of decorating an original scheduled to be transmitted by adding an image as accessory information based on a simple operation.

Solution mechanism: A paper on which accessory information intended to be added to an original scheduled to be transmitted (e.g., illustration, etc.) has been drawn is set on a facsimile device (S1), and after an accessory button has been turned ON (S2), said information is encoded as decorative image data (S3), and after the layout of said image data on the original scheduled to be transmitted has been designated (S5), it is memorized into the RAM (19) (S8). It thus becomes possible, at the time of the transmission of said original scheduled to be transmitted, to transmit the results of the image synthesis of said decorative image data with the image data of said original scheduled to be transmitted.

Patent Claims

Claim 1

A facsimile device characterized,

¹ Numbers in the margin indicate pagination in the foreign text.

With regard to a facsimile device designed to transmit and/or receive image data of an original scheduled to be transmitted, etc. via a telephone line,

By the possession of

An image decoding mechanism designed to decode images not only from said original scheduled to be transmitted, etc. but also from an accessory original, etc. scheduled to be transmitted, in an overlapping fashion, together with said original scheduled to be transmitted, etc.,

A layout designation mechanism designed to designate the layout of the image data of the accessory original which has been decoded by the aforementioned image decoding mechanism on said original scheduled to be transmitted, etc.,

A memory mechanism designed to memorize the image data of the accessory original the layout of which has been designated by the aforementioned layout designation mechanism,

A synthesis mechanism designed to synthesize the accessory original image data being memorized within the aforementioned memory mechanism with the image data of the original scheduled to be transmitted after having been decoded by the aforementioned image decoding mechanism, and

A transmission mechanism designed to transmit the image data synthesized by the aforementioned synthesis mechanism.

Claim 2

A facsimile device specified in Claim 1 characterized by the fact that the aforementioned layout designation mechanism is

endowed with a function of enlarging or reducing the image data of the accessory original decoded by the aforementioned image decoding mechanism.

Claim 3

A facsimile device specified in Claim 1 or 2 characterized by the facts

That multiple sets of accessory original image data the respective layouts of which have been designated by the aforementioned layout designation mechanism are designed to become memorized into the aforementioned memory mechanism and

That a selection mechanism designed to select the image data synthesized by the aforementioned synthesis mechanism from among the multiple sets of accessory original image data being memorized within the aforementioned memory mechanism is additionally configured.

Claim 4

A facsimile device specified in any of Claims 1 through 3 characterized by the additional possession of a printing mechanism designed to print out the image synthesized by the aforementioned synthesis mechanism.

Claim 5

A facsimile device specified in any of Claims 1 through 4 characterized by the additional possession of a display mechanism designed to display not only the accessory original image data decoded by the aforementioned decoding mechanism but also the

accessory original image data the layouts of which have been designated by the aforementioned layout designation mechanism.

Detailed explanation of the invention

[0001]

(Technical fields to which the invention belongs)

The present invention concerns a facsimile device, and in particular, it concerns a technology for adding accessory image information (e.g., illustration, etc.) to an original scheduled to be transmitted.

[0002]

(Prior art)

As far as facsimile devices known in the prior art designed to transmit and/or receive image information (e.g., original, etc.) via telephone lines are concerned, it has been possible to add messages (e.g., transmission source, transmission date, ID No., etc.) to a portion of an original scheduled to be transmitted prior to its transmission to a given destination.

[0003]

(Problems to be solved by the invention)

Only simple preliminarily designated character information can, however, be added to a portion of an original scheduled to be transmitted according to the aforementioned facsimile device of

the prior art, and it has been impossible, for example, for a user to add & transmit an arbitrary image (e.g., illustration, etc.). For this reason, in a case where a user desires to add & transmit an arbitrary image (e.g., illustration, etc.), it is necessary for him or her to write or paste an illustration, etc. on an original directly in advance and then to feed said original into the facsimile device, due to which a cumbersome original preparation operation is unavoidable.

[0004]

The objective of the present invention, which has been conceived for solving the aforementioned problems, is to provide a facsimile device capable of adding image information to an original scheduled to be transmitted based on a simple operation.

[0005]

(Mechanism for solving the problems)

In order to achieve the aforementioned objective, the facsimile device of the invention specified in Claim 1 is characterized,

With regard to a facsimile device designed to transmit and/or receive image data of an original scheduled to be transmitted, etc. via a telephone line,

By the possession of

An image decoding mechanism designed to decode images not only from said original scheduled to be transmitted, etc. but also from an accessory original, etc. scheduled to be transmitted, in

an overlapping fashion, together with said original scheduled to be transmitted, etc.,

A layout designation mechanism designed to designate the layout of the image data of the accessory original which has been decoded by the aforementioned image decoding mechanism on said original scheduled to be transmitted, etc.,

A memory mechanism designed to memorize the image data of the accessory original the layout of which has been designated by the aforementioned layout designation mechanism,

A synthesis mechanism designed to synthesize the accessory original image data being memorized within the aforementioned memory mechanism with the image data of the original scheduled to be transmitted after having been decoded by the aforementioned image decoding mechanism, and

A transmission mechanism designed to transmit the image data synthesized by the aforementioned synthesis mechanism.

[0006]

According to the aforementioned constitution, the image data on the accessory original (e.g., illustration, etc.) decoded by the image decoding mechanism are memorized, upon the completion of the designation of the layout thereof on the original scheduled to be transmitted, etc. by the layout designation mechanism, into a memory mechanism, and after said image data and the image data on the original scheduled to be transmitted have been synthesized by the synthesis mechanism, the obtained synthesized image is transmitted by the transmission mechanism, based on which it

becomes possible to transmit an overlapping form of the image of the accessory original (e.g., illustration, etc.) and the original scheduled to be transmitted, etc. It thus becomes possible, for example, to transmit an original wherein a blank portion thereof is decorated with adventitiously added desired image information (e.g., illustration, message, etc.).

[0007]

The facsimile device of the invention specified in Claim 2, furthermore, is a facsimile device specified in Claim 1 characterized by the fact that the aforementioned layout designation mechanism is endowed with a function of enlarging or reducing the image data of the accessory original decoded by the aforementioned image decoding mechanism.

[0008]

According to the aforementioned constitution, the layout designation mechanism is capable of enlarging or reducing the image data of the accessory original decoded by the image decoding mechanism, based on which it becomes possible to improve the degree of freedom for the layout of the image data of the accessory original.

[0009]

The facsimile device of the invention specified in Claim 3, furthermore, is a facsimile device specified in Claim 1 or 2 characterized by the facts

That multiple sets of accessory original image data the respective layouts of which have been designated by the aforementioned layout designation mechanism are designed to become

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memorized into the aforementioned memory mechanism and

That a selection mechanism designed to select the image data synthesized by the aforementioned synthesis mechanism from among the multiple sets of accessory original image data being memorized within the aforementioned memory mechanism is additionally configured.

[0010]

According to the aforementioned constitution, it becomes possible for the synthesis mechanism to synthesize the image data selected by the selection mechanism from among the multiple sets of accessory original image data being memorized within the aforementioned memory mechanism, based on which it becomes possible, by memorizing multiple sets of accessory originals (e.g., illustration, etc.) in advance, to add diverse image information at the time of the transmission of an original scheduled to be transmitted based on a simple operation.

[0011]

The facsimile device of the invention specified in Claim 4, furthermore, is a facsimile device specified in any of Claims 1 through 3 characterized by the additional possession of a printing mechanism designed to print out the image synthesized by the aforementioned synthesis mechanism.

[0012]

The image synthesized by the synthesis mechanism is printed out by the printing mechanism according to the aforementioned constitution, based on which it becomes possible to print out a decorated original scheduled to be transmitted obtained as a result of the synthesis of primary & accessory originals.

[0013]

The facsimile device of the invention specified in Claim 5, furthermore, is a facsimile device specified in any of Claims 1 through 4 characterized by the additional possession of a display mechanism designed to display not only the accessory original image data decoded by the aforementioned decoding mechanism but also the accessory original image data the layouts of which have been designated by the aforementioned layout designation mechanism.

[0014]

According to the aforementioned constitution, the display mechanism is capable of displaying not only the accessory original image data decoded by the decoding mechanism but also the accessory original image data the layouts of which have been designated by the layout designation mechanism, based on which it becomes possible to visually verify the decoded accessory original image data and the layout-designated accessory original image data. The frequency of failure of the synthesis of the original scheduled to be transmitted and accessory original can therefore be minimized.

[0015]

(Application embodiments of the invention)

In the following, the facsimile device of one application embodiment of the present invention will be explained with reference to figures. Figure 1 (a) is a diagram which shows an oblique view of the manner by which a decorative original becomes set into the facsimile device of the present invention, whereas (b) is a diagram which shows an oblique view of the facsimile device in a state where the decoded decorative original image data are being displayed on the display. The facsimile device (1) is constituted to synthesize, in a decorative fashion, an original which has been encoded in advance for decorating purposes (e.g., illustration, etc.) (hereafter referred to as the "accessory original") and a primary original scheduled to be transmitted (hereafter referred to as the "primary original") and to transmit the obtained decorated image original. Configured on the surface panel (2) are the communications dial key (3), the start button (4) for initializing communications, the display (5) for displaying various messages to be communicated and image data of encoded accessory originals, etc., and the open slot (6) for ejecting papers on which reception contents have been recorded. A recording paper roll is configured in the mainframe interior of the facsimile device (1), whereas the reception contents are printed on the recording paper by a recording head configured on the surface panel (2) side (discussed later).

[0016]

A scanner for decoding images from the primary original and accessory original (image decoding mechanism, discussed later) is additionally configured in the mainframe interior of the facsimile device (1). Configured on the surface panel (2) are the accessory button (layout designation mechanism) (8) for enabling the recognition of the image data encoded by the scanner (hereafter referred to as the "illustration data") by the device, the configuration button (layout designation mechanism) (9) for designating the layout of the illustration data on the primary original, the designation buttons (layout designation mechanism & selection mechanism) (10), namely buttons comprised of arrow keys of four directions used for designating the layout, etc., the enlargement/reduction button (layout designation mechanism) (11) for enlarging or reducing the illustration data, and the selection mode switch (selection mechanism) (12) for enabling a switch into a mode whereby desired illustration data are selected from among multiple sets of illustration data being memorized within the device.

[0017]

The electric constitution of the facsimile device (1) will be explained with reference to Figure 2. Figure 2 is a block diagram which shows an approximate electric constitution of the facsimile device (1). The facsimile device (1) possesses the CPU (15), which controls the overall actions of said device, whereas the ROM (16), in which action programs are being memorized, is connected

to said CPU (15). Also connected to the CPU (15), furthermore, are the scanner (CCD) (17), which decodes primary originals & accessory originals, the display (5), which displays the image data decoded by the scanner (17), and the operation keys (18), which consist of the aforementioned configuration button (9), designation buttons (10), enlargement/reduction button (11), etc.

[0018]

Also connected to the CPU (15), furthermore, are the RAM (memory mechanism) (19) for memorizing the illustration data the layout of which has been designated by the operation of the operation keys (18) and the modem (transmission mechanism) (20) for modulating the image data in preparation for communications via the telephone line. The recording head (printing mechanism) (21) for printing both the contents received by the present device and the decoding contents of the scanner (17) onto a recording paper, furthermore, is connected to the CPU (15) via the head driver (22). Incidentally, the CPU (15) is responsible not only for controlling the overall device actions but also for primary original image data transmission, illustration data designation, synthesis of the image data of the primary original with illustration data, etc., and it serves the respective functions of a layout designation mechanism, a synthesis mechanism, and a transmission mechanism.

[0019]

The facsimile device (1) is, as has been discussed earlier, endowed with functions of preliminarily decoding an accessory

original as a decorative image for a primary original and of transmitting its partial overlap with the primary original to a given destination. Actions for decoding said accessory original and for designating a layout for the decoded image data will be explained with reference to Figures 3 and 4. Figure 3 is a flow chart which shows the flow of routines for decoding the accessory original and for designating a layout for the decoded image /4 data, whereas Figure 4 is a diagram which shows a display example of the display (5) at the time of the layout designation of the decoded illustration data. In a case where such actions for decoding the accessory original and for designating its layout are invoked, a paper on which an image desired to be synthesized with a primary original (e.g., illustration, etc.) has been drawn is set on the facsimile device (1) (S1). In a case where the accessory button (8) is hereby ON (YES at S2), the illustration, etc. drawn on the paper become encoded as illustration data by the scanner (17) (S3). The illustration data thus encoded become displayed on the display (5) (S4).

[0020]

Next, the configurational position & size of the illustration data on the primary original, namely the layout thereof, become designated by a user's operation of the operation keys (18) (YES at S5), as a result of which the illustration data become processed in compliance with the designated status, whereas a layout image obtained as a result of this processing routine becomes displayed on the display (5), as Figure 4 indicates (S6).

After an identification No. has been assigned to the layout-designated illustration data based on the user's operation of the operation key (18) (YES at S7), said data are memorized into the RAM (19) (S8). Multiple sets of layout-designated illustration data can be memorized into the RAM (19), based on which it becomes possible to select illustration data desired to be synthesized with the primary original.

[0021]

In a case where the accessory button (8) is not ON at S2 (NO at S2), furthermore, the illustration, etc. drawn on the set paper become encoded as primary original image data, and the image data thus encoded are transmitted based on a normal protocol (S9).

[0022]

The original transmission action of the facsimile device (1) will be explained with reference to Figure 5. Figure 5 is a flow chart which shows the flow of routines at the time of the original transmission by the facsimile device (1). First, the user sets an original scheduled to be transmitted on the facsimile device (1) (S11). In a case where the selection mode switch (12) is hereby ON (YES at S12), the prevailing mode is switched to a mode whereby the illustration data are synthesized with the image data of the primary original and whereby the image data thus decorated are transmitted, as a result of which a state where desired illustration data can be selected from the RAM (19) comes to prevail. The multiple sets of illustration data being memorized within the RAM (19) are displayed on the display (5) as

illustration data candidates (S13). In a case where desired illustration data become selected from among the illustration data candidates based on the user's operation of the designation buttons (10) (YES at S14 & S15), the selected illustration data become decoded from the RAM (19) (S16). In a case where the start button (4) subsequently becomes pressed down for initializing the transmission (YES at S17), the original being set on the facsimile device (1) is decoded as a primary original, and after the image data of the primary original thus decoded and the illustration data selected at S15 have been synthesized in an overlapping fashion (S18), the synthesized data are then transmitted (S19).

[0023]

In a case where the selection mode switch (12) is OFF at S12, furthermore, a normal transmission routine for transmitting the image data of the original decoded by the scanner (17) as primary original image data is executed. In a case where the transmission start button (4) becomes turned ON (YES at S20), therefore, the original being set becomes decoded (S21), whereas the image data thus decoded become transmitted as they are without being synthesized with the illustration data (S22).

[0024]

Thus, the facsimile device (1) of the present application embodiment is capable of transmitting image data obtained by synthesizing, with the image data of the primary original, the illustration data being memorized as an accessory original and therefore of transmitting the primary original as a decorated

image based on a simple operation. Since it is also possible to encode multiple sets of illustration data prior to the transmission and to memorize the data to which identification Nos. have been added into the RAM (19), furthermore, desired image data can be selected from among multiple sets of decorative illustration data candidates based on a simple operation at the time of the transmission of the primary original.

[0025]

Incidentally, the present invention is not limited to the constitution of the aforementioned application embodiment, and various modifications are conceivable. The aforementioned application embodiment, for example, is constituted to redesignate the sizes of the illustration data via the enlargement/reduction button (11) at the time of the layout designation for the illustration data, although such a constitution is not binding, and it is not mandatory to orchestrate such a function of redesignating the illustration data sizes. The aforementioned application embodiment, furthermore, is constituted to preliminarily memorize multiple sets of layout-designated illustration data into the RAM (19) and to enable the selection of desired illustration data at the time of the transmission of the primary original, although it is not mandatory to orchestrate such a function of memorizing multiple sets of illustration data, and instead, it is also possible to have the scanner (17) decode an accessory original on every occasion for transmitting a primary original, to render a layout designation, and to synthesize the

image data of the primary original with the image data of said accessory original.

[0026]

(Effects of the invention)

As has been mentioned above, the facsimile device of the invention specified in Claim 1 is constituted to transmit the synthesis results of the image data of a primary original and the image data of an accessory original the layout of which on said primary original has been designated, based on which it becomes possible to transmit an overlapping form of the primary original and the image ([reiterated]) of the accessory original (e.g., illustration, etc.). It thus becomes possible to transmit a decorated original wherein desired image information (e.g., illustration, message, etc.) has been added to the blank portion, etc. thereof.

[0027]

The facsimile device of the invention specified in Claim 2, furthermore, is capable of enlarging and/or reducing the sizes of the image data of the accessory original, based on which it becomes possible to improve the degree of freedom for the layout of the image data of the accessory original.

[0028]

The facsimile device of the invention specified in Claim 3, furthermore, is constituted to synthesize image data selected from among multiple sets of accessory original image data being

memorized within a memory mechanism, based on which it becomes possible to decorate a primary original at the time of the transmission of said primary original by adding various images to said

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primary original based on a simple operation.

[0029]

The facsimile device of the invention specified in Claim 4, furthermore, is constituted to print out the image synthesized by the synthesis mechanism, based on which it becomes possible to print out a decorated original scheduled to be transmitted obtained as a result of the synthesis of the primary original and accessory original.

[0030]

The facsimile device of the invention specified in Claim 5, furthermore, is constituted to enable the visual verifications of the decoded accessory original image data and layout-designated accessory original image data. The layout designation accordingly becomes facilitated, and the frequency of failure of the synthesis of the primary & accessory originals can be minimized.

Brief explanation of the figures

Figure 1: (a) is a diagram which shows an oblique view of the manner by which a decorative original becomes set into the facsimile device of the present invention, whereas (b) is a diagram which shows an oblique view of the facsimile device in a

state where the decoded decorative original image data are being displayed on a display.

Figure 2: A block diagram which shows an approximate electric constitution of the facsimile device.

Figure 3: A flow chart which shows the flow of routines for decoding the accessory original and for designating a layout for the decoded image data.

Figure 4: A diagram which shows a display example of the display at the time of the layout designation of the decoded illustration data.

Figure 5: A flow chart which shows the flow of routines at the time of the original transmission by the facsimile device.

(Explanation of notations)

- (1) : Facsimile device;
- (8) : Accessory button (layout designation mechanism);
- (9) : Configuration button (layout designation mechanism);
- (10) : Designation buttons (layout designation mechanism & selection mechanism);
- (11) : Enlargement/reduction button (layout designation mechanism);
- (12) : Selection mode switch (layout designation mechanism);
- (15) : CPU (layout designation mechanism, synthesis mechanism, & transmission mechanism);
- (17) : Scanner (image decoding mechanism);
- (19) : RAM (memory mechanism);

- (20) : Modem (transmission mechanism);
(21) : Recording head (printing mechanism).

Figure 1

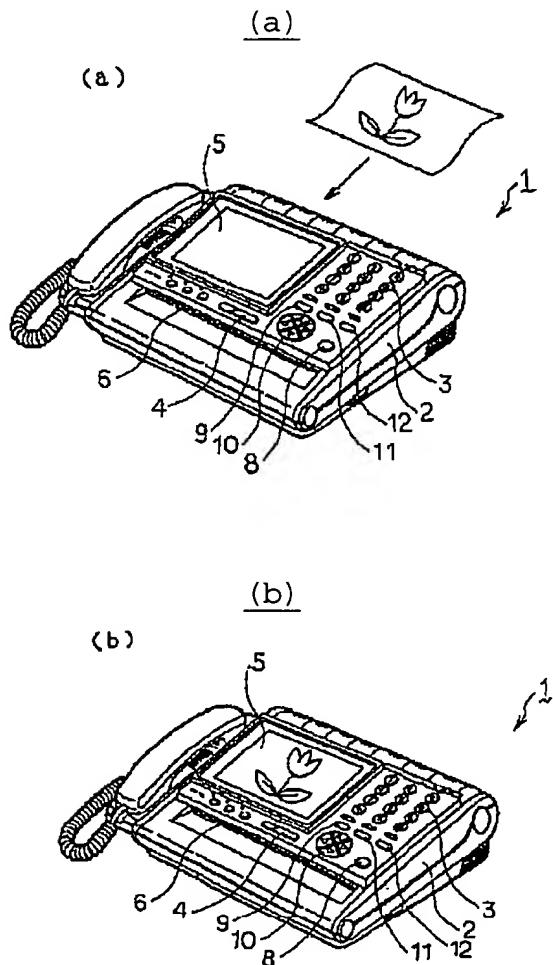
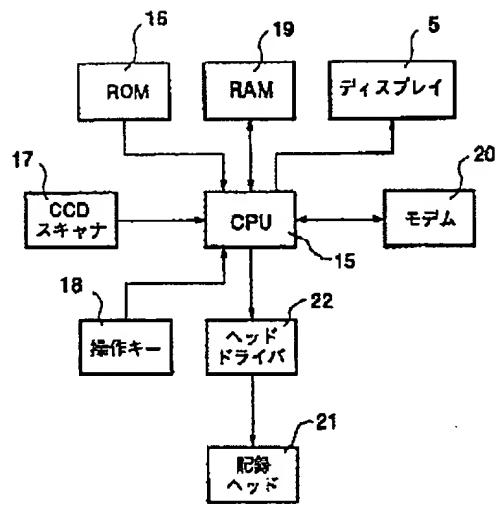


Figure 2



[(5): Display; (17): CCD scanner; (18): Operation keys; (20): Modem; (21): Recording head; (22): Head driver]

Figure 4

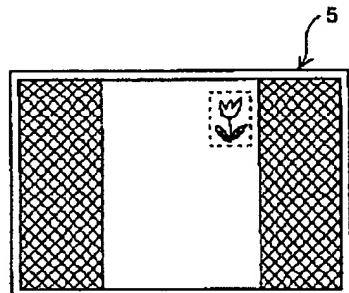
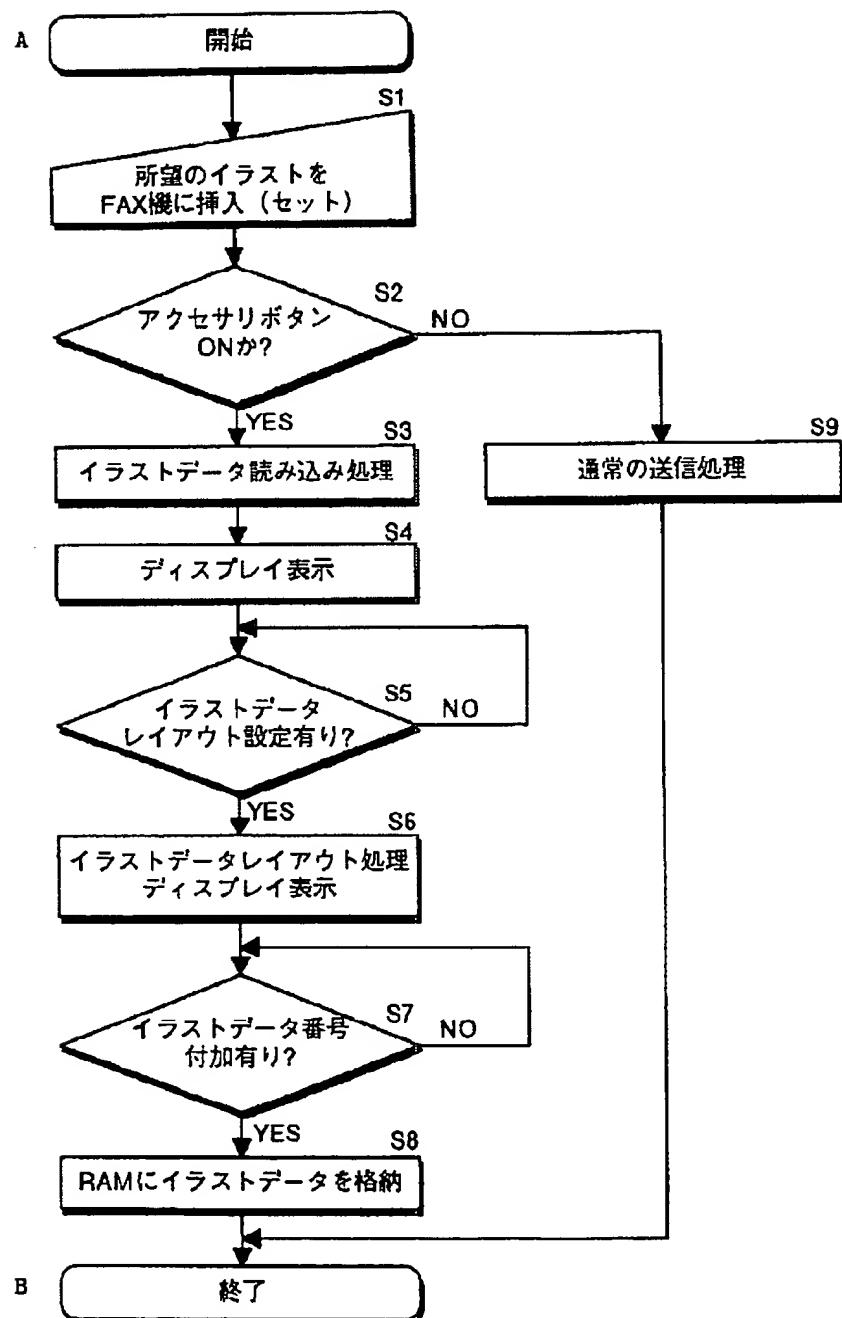


Figure 3

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【図3】

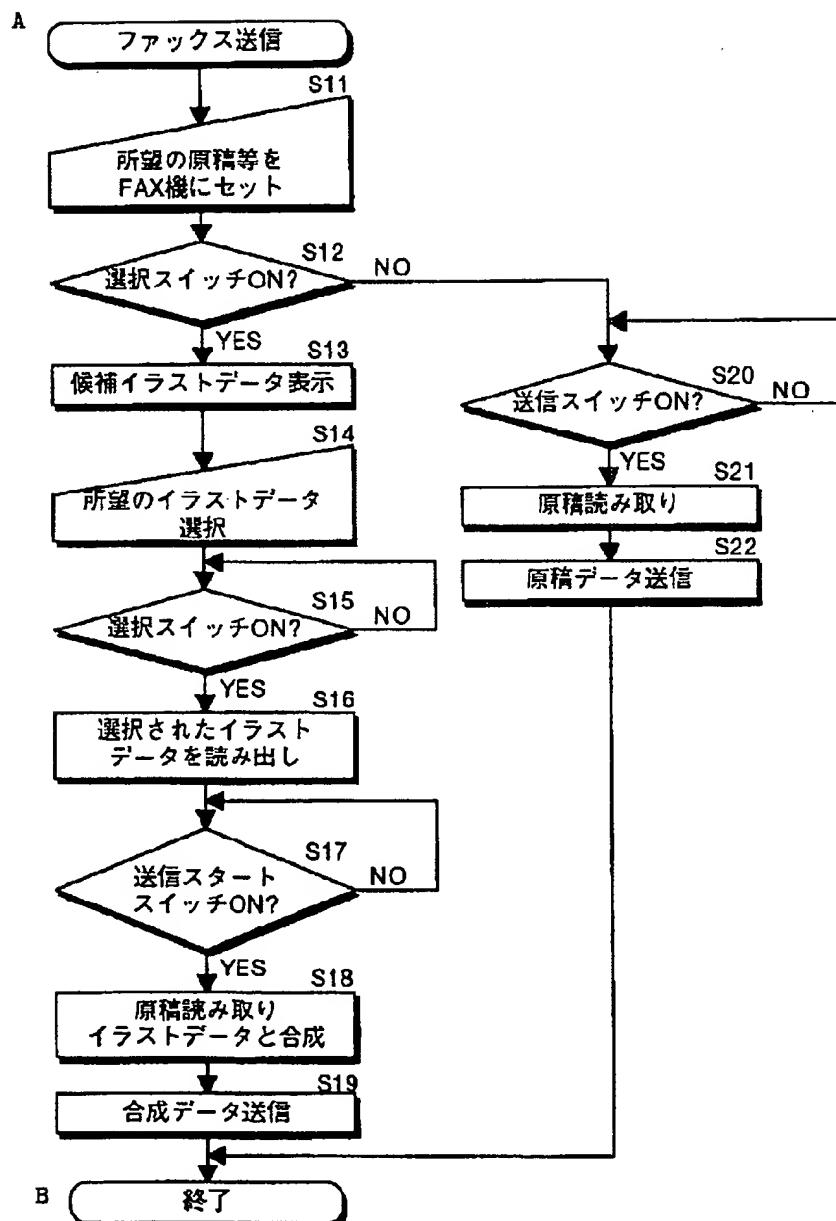


[(A) : Begin; (B) : End; (S1) : Insertion (setting) of desired illustration into FAX machine; (S2) : Accessory button ON?; (S3) : Routine for decoding illustration data; (S4) : Display ON; (S5) : Layout designated for illustration data?; (S6) : Illustration data layout routine & display ON; (S7) : Illustration data No. added?; (S8) : Storage of illustration data into RAM; (S9) : Normal transmission routine]

Figure 5

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【図5】



[(A) : FAX transmission; (B) : End; (S11) : Setting desired original, etc. on FAX machine; (S12) : Selection switch ON?; (S13) : Display of illustration data candidates; (S14) : Selection of desired illustration data; (S15) : Selection switch ON?; (S16) : Decoding of selected illustration data; (S17) : Transmission start switch ON?; (S18) : Original decoding & synthesis with illustration data; (S19) : Transmission of synthesized data; (S20) : Transmission switch ON?; (S21) : Original decoding; (S22) : Original data transmission]

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